

National Electric Power Regulatory Authority
Registrar Office

6

No: NEPRA/R/TRF-100/Lawi/ 16257

June 26, 2020

Subject: **69 MW Lawi Hydropower Project, District Chitral, Khyber Pakhtunkhwa-Application for EPC Level Tariff Petition**

Please find enclosed herewith the subject tariff petition submitted by Pakhtunkhwa Energy Development Organization (PEDO) vide letter No. 3512/PEDO/PD/Lawi HPP dated 25.06.2020 (received on 26.06.2020) for determination of EPC Stage Tariff for its 69 MW MW Lawi Hydropower Project in District Chitral, KPK.

2. The deficient information in the subject tariff petition, if any, shall be classified that it is required under Rule 3(2) & (8) of NEPRA (Tariff Standards & Procedure) Rules, 1998 (Tariff Rules) or an additional information is required under Rule 4(2) of the Tariff Rules.
3. The Senior Advisor (Tariff), Senior Advisor (Tech), and Legal Advisor (KIP) are requested to provide their comments that whether the provided information / documents by PEDO are complete as per the requirements of Tariff Rules for admission or highlight / mention the shortcomings, if any, which may cause non-admission of the subject petition.
4. The requisite comments may kindly be provided by 28.06.2020 for further necessary action in the matter, please.

26/6/20
Director
Registrar Office

1. SA (Tech)
2. SA(Tariff)
3. SLA

For Information:

1. Registrar
2. Assistant Registrar (Tariff) [to pursue]
3. Master File



PEDO

**PAKHTUNKHWA ENERGY DEVELOPMENT ORGANIZATION
GOVERNMENT OF KHYBER PAKHTUNKHWA PESHAWAR**

Site Office: 69 MW Lawi HPP Office, Langa Drosh, District Chitral



No. 3512 / PEDO / PD Lawi HPP
Dated: 25 / 06 / 2020

REGISTRAR
By No: 8579
Date: 26-06-20

To

✓ The Registrar
National Electric Power Regulatory Authority (NEPRA)
Neptra Tower Attaturk Avenue (East),
G-5/1, Islamabad.

**SUBJECT: 69 MW LAWI HYDROPOWER PROJECT, DISTRICT CHITRAL,
KHYBER PAKHTUNKHWA - APPLICATION FOR EPC LEVEL TARIFF
PETITION.**

I, Niamat Khan, Project Director, LAWI Hydropower Project of Pakhtunkhwa Energy Development Organization (PEDO) being the duly Authorized representative of PEDO by virtue of authority letter dated 30th March 2020 hereby apply to National Electric Power Regulatory Authority for determination of tariff for 69 MW LAWI Hydropower Project, pursuant to the Regulation of Generation, Transmission and Distribution of Electric Power Act, 1997.

2. I, certify that the documents-in-support attached with this application are prepared and submitted in conformity with the provisions of the National Electric Power Regulatory Authority Licensing (Application and Modification Procedure) regulations, 1999 and undertake to abide by the terms and provisions of the above said regulations. I further undertake and confirm that the information provided in the attached documents-in-support is true and correct to the best of my knowledge and belief.

3. A BANK DRAFT in the sum of **Rs. 1,117,440 /-** being the non-refundable tariff determination fee calculated in accordance with Schedule II to the National Electric Power Regulatory Authority Licensing (Application and Modification Procedure) Regulations, 1999, 2002 and 2011 is also attached.

For information & u/g m.
- DR-I / AL
- m F
- upy / K
26/6

Engr. Niamat Khan
Project Director
Lawi Hydropower Project

Allied Bank

http://10.122.342.5 T21AP1 BBB13635508

Stationary/Ref No:

On Demand Pay

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ALLIED BANKERS CHECK

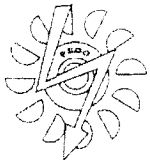
Payable at any branch in Pakistan

PKR

13635508

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Received along with 2 folders & by Rs = 1,117,440/-



PEDO

**PAKHTUNKHWA ENERGY DEVELOPMENT ORGANIZATION
GOVERNMENT OF KHYBER PAKHTUNKHWA PESHAWAR**

Site Office: 69 MW Lawi HPP Office, Langa Drosh, District Chitral



No. 3512/PEDO/PD Lawi HPP
Dated: 25/06/2020

To

✓ The Registrar
National Electric Power Regulatory Authority (NEPRA)
Nepra Tower Attaturk Avenue (East),
G-5/1, Islamabad.

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KHYBER PAKHTUNKHWA - APPLICATION FOR EPC LEVEL TARIFF
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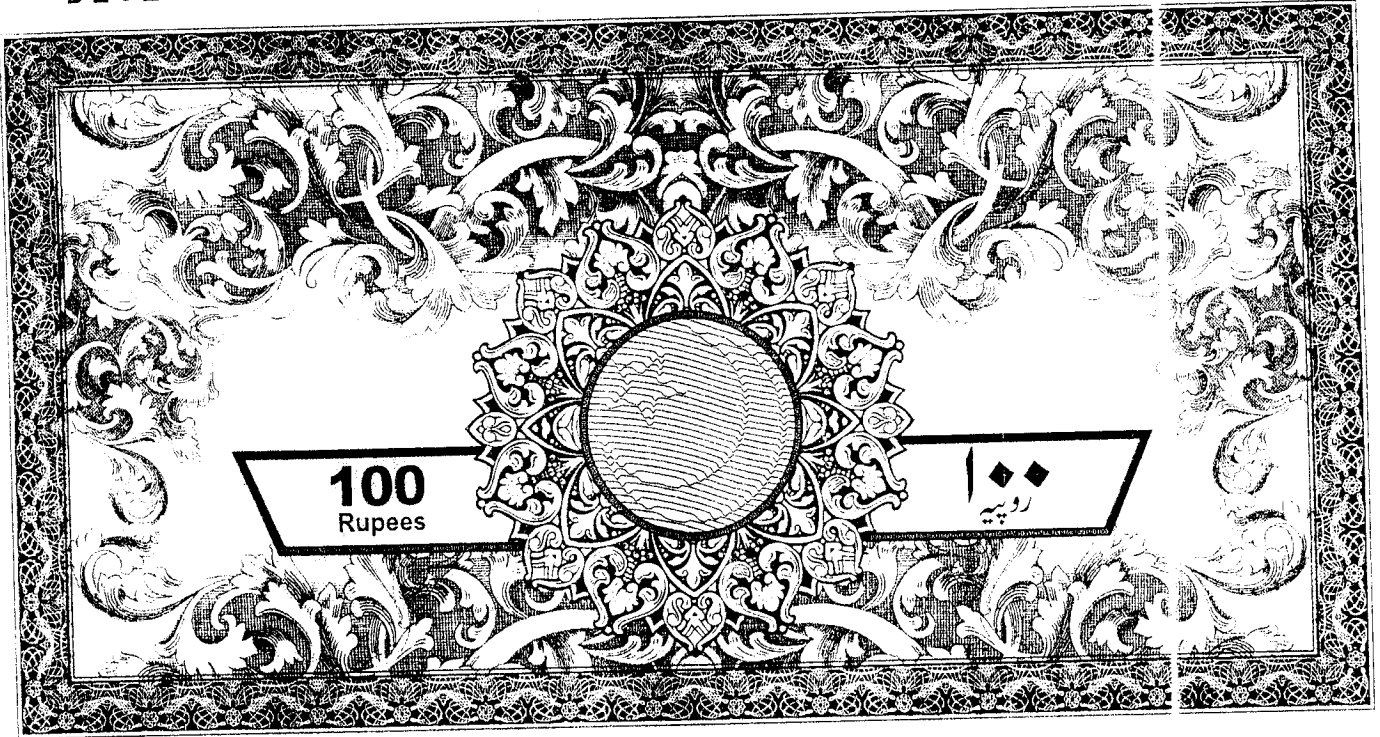

Engr. Niamat Khan
Project Director
Lawi Hydropower Project

Cc: (for information)

- Chief Executive Officer PEDO, Peshawar.
- GM (Hydel), PEDO, Peshawar.
- Chief Engineer (Dev), PEDO, Peshawar.


Engr. Niamat Khan
Project Director
Lawi Hydropower Project

10. *Journal of the American Medical Association*, 1997; 278: 1039-1044.



BEFORE THE NATIONAL ELECTRIC POWER REGULATORY AUTHORITY

AFFIDAVIT

I Niamat Khan, Project Director, LAWI Hydropower Project being duly authorized representative/attorney of Pakhtunkhwa Energy Development Organization (PEDO), hereby solemnly affirm and declare that the contents of the accompanying Tariff Petition dated 25th June, 2020 including all supporting document are true and correct to the best of my knowledge and belief that nothing has been concealed.

I also affirm that all further documentation and information to be provided by me in connection with the accompanying petition shall be true to the best of my knowledge and behalf.

Deponent

Project Director
LAWI Hydropower Project
PEDO, Peshawar

PROJECT DIRECTOR
LAWI HPP

Before

THE NATIONAL ELECTRIC POWER REGULATORY AUTHORITY (NEPRA)

PETITION FOR THE DETERMINATION OF EPC STAGE GENERATION TARIFF

FOR A
LAWI HYDROPOWER PROJECT OF 69 MW



PROJECT DIRECTOR
(LAWI) HYDROPOWER PROJ
PEDO, Peshawar



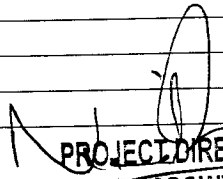
PROJECT DIRECTOR
(LAWI) HYDROPOWER PR
PEDO, Peshawar

AT

DROSH, DISTRICT CHITRAL (LOWER)-KHYBER PAKHTUNKHWA
PAKHTUNKHWA ENERGY DEVELOPMENT ORGANIZATION (PEDO)


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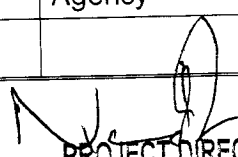
Annexure-6 Price Bid Evaluation Report



PROJECT DIRECTOR
(LAWI) HYDROPOWER PROJCT
PEDO, Peshawar

GLOSSARY

Abbreviation	Name /Term	Abbreviation	Name/Term
AY	Agreement Year	LDs	Liquidated Damages
CAPEX	Capital Expenditure	LIBOR	London Inter Bank Offered Rate
CED	Central Excise Duty	MO	Maintenance Outage
COD	Commercial Operations Date	MoF	Ministry of Finance
CPI	Consumer Price Index	MWH	Mega Watt Hours
CPP	Capacity Purchase Price	NDT	Non Destructive Testing
CY	Calendar Year	NEO	Net Electrical Output
DC	Dependable Capacity	NEPRA	National Electric Power Regulatory Authority
DCS	Distributed Control System	NPCC	National Power Control Center
ECC	Economic Coordination Committee	NTDC	National Transmission & Dispatch Company Ltd.
EIA	Environmental Impact Assessment	O&M	Operation and Maintenance
EMP	Environmental Management Plan	OEM	Original Equipment Manufacturer
EPA	Environmental Protection Agency	PEPCO	Pakistan Electric Power Company (Private) Ltd.
EPC	Engineering, Procurement & Construction	PPA	Power Purchase Agreement
EPP	Energy Purchase Price	PPIB	Private Power and Infrastructure Board
FBR	Federal Board of Revenue	PRI	Political Risk Insurance
FM	Force Majeure	ROE	Return on Equity
GOP	Government of Pakistan	ROEDC	Return on Equity During Construction
GST	General Sales Tax	ROW	Right of Way
HDF	Hydel Development Fund	SECP	Securities and Exchange Commission of Pakistan
IA	Implementation Agreement	SO	Scheduled Outage
IDC	Interest during Construction	SOP	Standard Operating Procedures
Lee	Initial Environmental Examination	LPC	Late Payment Charges
IPPs	Independent Power Procedures	LTSA	Long Term Service Agreement
KIBOR	Karachi Interbank Offered Rate	MI	Major Inspection
KP	Khyber Pakhtunkhwa	MIGA	Multilateral Investment Guarantee Agency
LC or LoC	Letter of Credit		

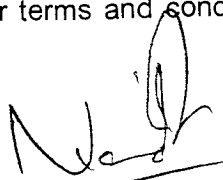

PROJECT DIRECTOR
(LAWI) HYDROPOWER PROJEC
PEDO, Peshawar

BEFORE THE NATIONAL ELECTRIC POWER REGULATORY AUTHORITY (NEPRA)

1. TARIFF PETITION

Under Rule 3 of the National Electric Power Regulatory Authority (Tariff Standards and Procedure) Rules, 1998, for determination of tariff for the 69 MW LAWI Hydropower Project in accordance with the NEPRA (Tariff Standards and Procedure) Rules 1998, read with Mechanism for Determination of Tariff for Hydropower projects and SRO 763 (1)/2018 dated June 19, 2018 providing benchmarks for determination/ approval of the EPC Stage Reference Tariff and its Adjustment/ Indexation provisions and other terms and conditions for the Project.

Pakhtunkhwa Energy Development Organization (PEDO)


Project Director
LAWI Hydropower Project
PEDO, Peshawar

PROJECT DIRECTOR
(LAWI) HYDROPOWER PROJECT
PEDO, Peshawar

2. THE PETITIONER

The Petitioner is Pakhtunkhwa Energy Development Organization (PEDO) for its 69 MW LAWI Hydropower Project. Pakhtunkhwa Energy Development Organization (PEDO), since its inception in 1986, has been instrumental in identifying and exploiting Hydropower potential in Khyber Pakhtunkhwa. The Organization is under the administrative control of Energy and Power Department of the Provincial Government and is governed by the Board of Directors. PEDO has so far identified a number of promising Hydel potential sites of more than 6,000 MW cumulative Capacity, which can be developed in a systematic manner either through Public sector or Private sector.

2.1. Name and Address of the Petitioner

Registered Office:
Pakhtunkhwa Energy Development Organization (PEDO)
PEDO House, 38-B2, Phase V,
Hayatabad, Peshawar
Business Address: As above

2.2. Authorized Representatives of the Petitioner

Mr. Niamat Khan S/o Sherbaz Khan.

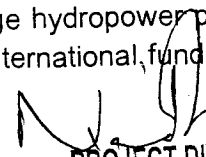
2.3. Petition Fee

The applicable fee for the tariff petition payable under NEPRA Rules adjusted for CPI is paid along with this Petition.

2.4. Pakhtunkhwa Energy Development Organization (PEDO)

2.4.1. Background of PEDO

Khyber Pakhtunkhwa province of Pakistan is blessed with huge hydropower potential. This potential remained focus of interest to private investors and international funding agencies.


PROJECT DIRECTOR
(LAWI) HYDROPOWER PROJECT
PEDO, Peshawar

Most of the Hydropower projects of Pakistan including Tarbela and Warsak hydropower stations are located in KPK.

Pakhtunkhwa Energy Development Organization (PEDO), since its inception in 1986, has been instrumental in identifying and exploiting hydel potential in Khyber Pakhtunkhwa. The organization is under the administrative control of Irrigation and Power Department of Provincial Government and is governed by the Board of Directors. PEDO has so far identified a number of promising hydel potential sites of more than 6000 MW capacity which can be developed in a systematic manner either through Public or Private sector.

2.4.2. Objectives of the Organization

- Prepare comprehensive plan for development of the power and energy resources of the province.
- Frame schemes related to generation, transmission and distribution of power, construction, maintenance and operation of powerhouses.
- Advisory body for the Government of KPK in power sector matters regarding hydropower development.
- Conducting feasibility studies, surveys of potential sites of hydropower development etc.
- Implementation of Provincial Hydel Power Policy to promote private sector investment in generation, transmission and distribution of power.

2.4.3. Role of PEDO

The Provincial Government has entrusted a dynamic role to PEDO, which mainly oriented towards private sponsor's participation power sector projects besides developing projects in public sector. PEDO has established a dedicated Directorate to provide one window facility to private sponsors.

The additional role of PEDO assigned by the Provincial Government in 2018 is as follows:

- Policy making
- Facilitation for private sector development
- Preparation of feasibility studies for hydropower generation in the province
- Regulatory to the extent that it does not conflict with NEPRA or any of its licensee jurisdiction/area of operations. The activities of PEDO can broadly be classified as:
 1. A hydropower Developer
 2. A hydropower Prospector
 3. Facilitator for Private Sector Hydropower Projects.

PEDO, with the assistance of GTZ (German Agency for Technical Cooperation), has compiled a Master Plan for rural electrification in the Northern mountainous areas of KPK with particular emphasis on those areas which were not connected to the National Grid System. The Master Plan entails a total potential of more than 6000 MW that has been identified for public and private sector development. The hydropower potential sites are mainly located in the Northern districts of KPK i.e. Chitral, Dir, Swat, Indus Kohistan and

Mansehra. The organization has also completed feasibility studies for eighteen hydropower projects.

2.4.4. PEDO Organization

Chairman

Mr. Nisar Muhammad

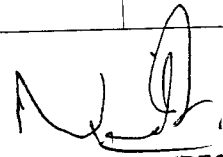
Members

- | | |
|----------------------------------|---|
| 1- CEO PESCO | 2- Mr. Bakht Zaman |
| 3- Mr. Abdul Siddique | 4- President Chamber of Commerce and Industry |
| 5- Mr. Arbab Khudad | 6- Syed Mussawar Shah |
| 7- Mr. Hassan Nasir | 8- Secretary Energy & Power |
| 9- Secretary Finance Department | 10- Secretary Home Department |
| 11- Chief Executive Officer PEDO | |

2.4.5. PEDO as Developer / Owner

PEDO has already constructed 07 hydropower projects, 08 projects are under construction and feasibility of 18 projects has been completed.

Sr. No.	Name of Project	District	Capacity (MW)
1	Malakand-III Hydropower Project	Malakand	81.00
2	Pehur Hydro Power Project	Swabi	18.00
3	Reshun Hydro Power Project	Chitral	4.20
4	Shishi Hydropower Project	Chitral	1.80
5	Ranolia Hydro Power	Kohistan	17.00
6	Daral Khwar Hydropower Project	Sawat	36.60
7	Machai Hydro Power Project	Mardan	2.60
	Total Installed Capacity		161.20

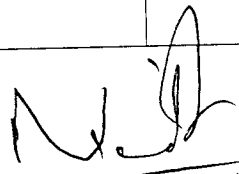

PROJECT DIRECTOR
(LAWI) HYDROPOWER PROJCT
PEDO, Peshawar

2.4.6. Under Construction Hydropower Projects

S/No	Name of Project	District	Capacity (MW)
1	LAWI HPP	Chitral	69.00
2	Kalkot- Barikot HPP	Swat	47.00
3	Patrak- Sheringal HPP	Dir	22.00
4	Koto HPP	Dir	40.80
5	Karora HPP	Shangla	11.80
6	Jabori HPP	Mansehra	10.20
7	Balakot HPP	Mansehra	300.00
8	Gorkin-Matilthan HPP	Swat	84.00
	Total Capacity		584.80

2.4.7. Projects with Completed Feasibility

S/No	Name of Project	District	Capacity (MW)
1	Patrak-Shringal HPP	Dir	22.00
2	Nandihar HPP	Batagram	12.30
3	Arkari Gol HPP	Chitral	99.00
4	Istaro Boni HPP	Chitral	72.00
5	Mujigram-Shaghore HPP	Chitral	64.30
6	Naran Dam HPP	Mansehra	188.00
7	Balakot HPP	Mansehra	300.00
8	Sharmai HPP	Dir	150.00
9	Shushgai HPP	Chitral	144.00
10	Shogosin HPP	Chitral	132.00
11	Gahrait-Swir Lasht HPP	Chitral	377.00
12	Toren More Kari HPP	Chitral	350.00
13	Laspur Marigram HPP	Chitral	230.00
14	Barikot Patrak HPP	Dir	47.00
15	ShigoKach HPP	Dir	102.00
16	Ghor Band HPP	Shangla	20.80
17	Batakundi HPP	Mansehra	96.00
18	Jameshill More Lasht	Chitral	260.00
	Total Capacity		2,666.40


PROJECT DIRECTOR
(LAWI) HYDROPOWER PROJECT
PEDO, Peshawar

3. PROJECT BACKGROUND HISTORY AND BASIS FOR THE PETITION

3.1. Introduction

LAWI hydropower is located on Shishi River, a Left tributary of Chitral River near Drosh Town in District Chitral, Khyber Pakhtunkhwa. The weir is located on the Shishi River near Lao Nissar village, which is 18 km from river mouth. The power house is located on the left bank of the upstream Chitral River, at about 1.8km distance from confluence of Shishi River and Chitral River. The installed capacity of LAWI Hydro Power is 69 MW, design flow $20\text{m}^3/\text{s}$, rated head 398.5m, the annual average power generation 303GWh, annual utilization hours 4391. M&E equipment comprise 3 sets of vertical shaft 4 jet double regulated Pelton turbines and vertical shaft generators. The civil works are divided into five parts: weir, headrace system, power house and switch yard, residential colony and access road. The weir is composed of overflow section, under sluice section, retaining walls, stilling basin and d/s apron and access road to weir site. Headrace system consists of intake structure, connecting channel, sedimentation basin, pressure headrace tunnel, surge shaft, pressure shaft, and steel lined pressure tunnel. Residential colony comprises of office buildings, residential buildings, hostels, mosques, markets and schools etc.

3.2. Background

The Pakhtunkhwa Energy Development Organization-PEDO, Govt. of Khyber Pakhtunkhwa has allocated funds through its own resources, towards the development of 69 MW LAWI Hydropower Project (LHPP) "the Project" on Engineering Procurement and Construction (EPC) mode. "The works" include detailed engineering designing of all the components of the project from water to wire, supply, construction, erection/installation, testing and commissioning of all Civil Structures and Electro-Mechanical Equipment of the LHPP including Infrastructure Works. The construction period of the project is 60 months.

The Board of Directors of PEDO authorized the Project Director LAWI Hydropower to sign the contract agreement with EPC Contractor. The Letter of Acceptance was issued on 09th October, 2015 to the EPC Contractor.

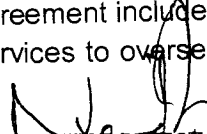
After approval of Board of Directors PEDO, meeting was held on in KPK House under the Chairmanship of the Minister of E&P where it was decided to go ahead with the signing of the EPC Contract Agreement, in parallel to the approval of revised PC-1.

Accordingly the agreement for the EPC Contract of 69 MW LAWI Hydropower was signed with a JV of Chinese and Pakistani contractors comprising Sichuan, Sarwar & Co., Silian and Chongqing Luyang JV at PEDO House on 26th October, 2016.

The Project Director LAWI Hydropower Project issued to the EPC Contractor order to commence the works on 3rd November, 2016 and to complete the said works within 60 months as per contract.

3.2.1. Feasibility Review by Management Consultants (2012)

M/s Associated Consulting Engineers – ACE Ltd. and Partners have been appointed as the Management Consultants (MC). The scope of the Consultancy Services Agreement includes supervision, coordination and technical input for continuous and diligent services to oversee


PROJECT DIRECTOR
(LAWI) HYDROPOWER PROJECT
PEDO, Peshawar

the execution of LAWI Hydropower Project. The services also include support to the Project starting with the review of Feasibility Report, to assist in selection of the EPC Contractor, upto the Final Commissioning of the Project.

It is stated that generally the study is of good quality. However, deficiencies and needed improvements pointed out by ACE and Partners Specialists (in their respective fields) are explained in the forthcoming sections.

Feasibility Review Report was accordingly prepared by ACE and Partners and submitted to the Client December 2012. The Client approved the revised status of the Project in January 2013.

3.3. Project Objectives

Primary objective of the Project is to generate 69 MW hydropower with average annual energy production of 303 GW providing 17% Equity based IRR.

3.4. The EPC Contract

The EPC Contract was signed in October 2016 by PEDO as Employer and consortium of M/s Sichuan-Sarwar-Silian-Chongqing Luyang JV as EPC Contractor. The terms and conditions of EPC are based on FIDIC rules and this tariff petition is based on the terms and conditions presented in the signed EPC Contract. It is assumed that COD stage tariff shall allow the adjustments/revisions agreed between the EPC contractor and PEDO thus providing for a strictly cost plus tariff. The contract award was made through Competitive bidding and most stringent rules pertaining to award of such contracts were followed.

Time for Completion: The time for completion for EPC works including preliminary works and final completion as envisaged in the initial plan was 60 (Sixty) months.

3.4.1. Plant & Equipment Procurement /Civil Works-EPC Contract

The project cost estimates forming the basis of this petition are based on the EPC contract price agreed with EPC Contractor. The exchange rate applied in this petition is same as used in the EPC contract, which shall be indexed for variations as per the documentary evidence confirming the exchange rates prevalent at the time of corresponding payments and in accordance with the provisions of Power Purchase Agreement to be entered between PEDO and the Power Purchaser. The EPC price shall be indexed and made firm at the time of COD after accounting for all escalations/variation orders etc. under the provision of EPC Contract.

3.4.2. The objectives of EPC Contract

The objectives being pursued while awarding the EPC Contract are as follows:

- High plant efficiency and low operating cost;
- Utilization of proven design directed toward extended plant life and total system;
- Reliability;
- Redundancy of specific system and control to assure a high degree of plant;

- Availability;
- Operational flexibility under various operating conditions and
- Equipment-layout for easy maintenance.

3.5. Executing and Financing Agency

Executing Agency (EA) for implementation of the Project is Pakhtunkhwa Energy Development Organization (PEDO) of KPK Province headed by Chief Executive Officer. The Authorized Representative of PEDO is the Project Director, LAWI Hydropower Project, assisted by the Management Consultants (MC). The planned financing of the LAWI Hydro Project is through long-term debt (80%) and equity (20%) basis. Hydel Development Fund (HDF)/GoKP has provided loan to the Project. The currently contemplated financing structure is as follows:

Sr. No.	Description	US\$ million
1	Capital Cost	US\$ 153.39 million
2	Debt Equity ratio	80:20
3	Debt	US\$ 122.71 million
4	Equity	US\$ 30.68 million

Major lending for the Project shall be from HDF (Hydel Development Fund). In case of any change in the debt composition, the, debt servicing component and the resultant Tariff shall be adjusted accordingly, as has been mentioned in the Determinations made by Authority in case of various other projects. This change, if occurs, shall be with the approval of the NEPRA Authority at the time of Commercial Operations Date (COD).


The financing structure and the associated terms in this proposal/petition are highly supportive of power purchaser/consumer interest and in view of the volatile economic scenario globally and especially outlook about Pakistan. The Authority is requested to support this project on the merit of its benefits this project brings to the province of KPK in particular and the country in general based on responses received from the financial markets. In today's volatile market environment, it is critical for the Authority (NEPRA) to appreciate that the financing structure and associated terms are fully subject to adverse changes in the financial markets. This financing structure assumes that full indexation for foreign exchange (for foreign loans, if any) and interest rate changes related to the debt financing will be allowed under the tariff.

3.6. Project Implementation Arrangements

Executing Agency: Pakhtunkhwa Energy Development Organization (PEDO)
Management Consultants (MC):

A Joint Venture of

- 1) Associated Consulting Engineers – ACE Limited
- 2) Engineering General Consultants – EGC (Pvt.) Ltd.
- 3) Technical Engineering and Management – TEAM Consultants


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3.7. Benefits Associated With the Project

Specifically the following benefits associated with LAWI Hydropower Project will accrue once the LAWI Hydropower Project connects to the grid. The Project will provide much needed electricity both for the province of KPK as well as strengthening the PESCO grid with reliable power without any fuel cost. Other benefits are as follows:

3.7.1. Savings in Foreign Exchange

LAWI Hydropower Project utilization of the hydel source within Pakistan not only benefits Power Purchaser but also saves precious foreign exchange to the national economy in terms of lower fuel imports required for similar generation in oil-fired plants. LAWI Hydropower Project will be an important and valuable asset for Pakistan. The Plant would be expected to generate electricity at base load in economic preference to virtually all of the oil-fired thermal power stations in Pakistan.

3.7.2. Environmental Friendly Operations

LAWI Hydropower Project will be environment friendly. The Environmental Impact Analysis confirms that the Project will cause no significant environmental impacts and very limited land or population relocations. The utilization of high efficiency low emission plant technology are major contributors toward achieving minimal environmental impact with low air emissions, and zero liquids discharges.

3.7.3. Operations and Maintenance Arrangements

PEDO has plans to appoint a dedicated team of professionals comprising engineers, technicians, accounts and administrative staff as well as support workers. While appointing staff for the project, due consideration and preference shall be given to the people belonging to the local area if otherwise eligible.

3.8. Salient Project Features

Main components of the Project include Weir, Intake Structure, Connecting Tunnel Sand Trap, Headrace Tunnel, Surge Chamber, Penstock, Powerhouse, 132kV Transmission Line and 132 KVA Switch Gear.

Location of Project	Drosh Town, Chitral District
Water Source	Shishi River
Total Installed Capacity	69 MW
Dam Type	Low height concrete diversion weir
Design Net Head	394m
Design Flow	20 m ³ /s
Weir Type	concrete weir
Weir width (overflow section)	60 m long; 10.6 m high (from foundation bed)
Sand Trap Length	90.00 m long; Double Chamber
Tunnel Length / Diameter	12.16 Km Long / 4.30m

Surge Shaft	Height 70 m, Dia 9 m
Pressure Shaft (Penstock)	236 m (vertical), 780m (horizontal), Dia 3m/2.5m
Mean Annual Energy	303 GWh
Turbine	Pelton
Nos. of Turbines	3
No. Of Generator	3
Turbine Capacity	23 MW (6.66m ³ /s)
Power House	66.60 m×21.20m×26m (Surface type)
Power Factor	0.85

4. PROJECT COST

4.1. Cost Break-Up

Following is the break-up of the project costs:

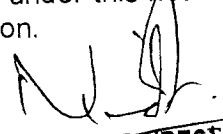
Sr. No.	Cost Item	US\$ Million
1.	EPC Contract/Construction	115.24
2.	Land Cost	1.77
3.	Transmission Line Cost	2.40
4.	Development Cost	1.44
5.	Cost of Loan Arrangement/Financing Fee/ Commitment Fee	2.49
6.	Management Consultants Cost	2.94
7.	Project Capital Cost without IDC	126.28
8.	Interest during Construction (IDC)	27.11
	Project Capital Cost	153.39

4.1.1. EPC Cost

The estimates given in the petition are based on the signed EPC contract. The Contract envisages that the price is firm and final other than the allowed variations stipulated in the contract. This EPC contract is FIDIC based and thus not only provides transparency but also is in accordance with best international practices providing a fair/ win-win situation for Employer as well as Contractor. The EPC Price as agreed in the EPC Contract for components of civil works as well as electromechanical equipment are given in Annexure A (Project Brief). The figure includes warranty and spares provided under the EPC. The EPC Price is US\$ 115.24 million.

4.1.2. Land Acquisition and Resettlement

The cost associated with acquisition of land, compensation for resettlement to the inhabitants of the area to be affected by the development of the Project, compensation for removal of trees and crops, cost of social welfare of the local community and other allied costs, to be incurred by the Project including cost of consultants and legal fees pertaining to land acquisition and resettlement, have been estimated and accounted for under this head. The cost associated with these items has been estimated at US \$ 1.77 Million.


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4.1.3. Development Cost

The Project Development cost including (Salary, Generation Licence & Tariff Petition Fee, Purchase & Repair of Durable Goods, Commodities and Service have been estimated amount at US\$ Million 1.44 as per Reference (Approved Revised PC-01).

4.1.4. Cost of Loan Arrangement/ Financing Fee

Financial Fee & Charges include costs related to Debt Financing of the project. Such financing fees include commitment fee. The Financial charges as part of the Project Cost i.e. 2.00% of the debt (excluding Interest during construction and financial charges) and Commitment Fee 0.50% of the Debt.

Since the loan for this project is part of the Public Debt arranged from HDF (Hydel Development Fund) through GOP/KP, the estimated amount is US\$ Million 2.49 (Financing Fee US\$ Million 1.98 + Commitment Fee US\$ 0.51 Million).

4.1.5. Engineering and Supervision Cost

Engineering and construction supervision costs during the construction of the civil works and for the supervision of the procurement, testing, installation and commissioning of the mechanical and electrical works have been estimated as is US\$ Million 2.94.

4.1.6. Interest during Construction (IDC)

The estimated figure is US\$ 27.11 million. The IDC is calculated based on a Construction period of 60 months. The interest rate used for Local Debt, Hydel Development Fund (HDF)/GoKP is @ 10.09%.

4.2. Tariff Structure & Summary

The Tariff is a two part tariff, comprising Capacity and Energy charges based on a 30 years term. This tariff will be incorporated into the PPA to be entered into in due course between the Petitioner and CPPA/PESCO. This Tariff Petition contains detailed assumptions and adjustment formulae which will form part of Schedule 1 to the PPA.

The capital structure of the Project is as follows:

	<u>US\$ (Million)</u>
Total Project Cost	153.39
Project Debt	122.71
Project Equity	30.68
Debt Equity ratio	80: 20

These numbers are based on the detailed assumptions stated in the appended assumptions and stated elsewhere in this Petition. Change in the assumptions shall result in a change in these numbers. The proposed tariff figures appended herein below are the result of a detailed financial analysis and consideration of technical, commercial and legal aspects.

4.3. Variable O&M

This component primarily includes lubricant consumption, consumables, imported spare parts to be changed on normal Scheduled maintenance and unscheduled maintenance. Also, it includes specialized technical services from manufacturer during maintenance of the Power Plant. The equipment has manufacturer recommended overhauling schedules that

are based on actual running hours. The actual timing or the major overhaul depends on the dispatch provided to the Power Plant. Based on the fact that major plant components will be imported, the variable O&M (foreign component) will be indexed to the European CPI, USCPI as well as indexation mechanism applicable in China. This tariff component will also be adjusted for currency indexation on a quarterly basis. Total O&M is estimated 2% of the Project Cost excluding Interest during construction. Variable O&M is 25% of the total O&M cost of the project; moreover, the O&M are further subdivided into foreign component and local component as follows:-

Calculation of O&M Cost

	<u>US\$ Million</u>
Project cost excluding IDC	126.28
2% of Total O&M cost/Net Energy (303 GWh)	2.526/303
Variable O&M cost 25% of the Total O&M	0.00208

Sub Component	Percentage	Cost in Pak Rs.	Cost in Pak Rs.	Indexation
Local	50%	$0.00208 \times 166.587 \times 50\%$	0.173	Pakistan WPI
Foreign	50%	$0.00208 \times 166.587 \times 50\%$	0.173	European CPI/US CPI, Chinese indices, PKR/US \$ and PKR/EURO

Reference: Approved Tariff Petition by NEPRA of Daral Khwar Hydropower Project

4.4. Non -Debt Capacity Component

This component represents the Fixed O&M costs (Foreign and Local), insurance, financing cost of working capital, return on equity return on equity during construction and withholding tax. A summary of the Capacity charges is provided in the following:

4.4.1. Fixed O&M

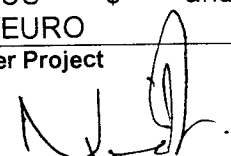
The fixed O&M component or the capacity payment represents the fixed costs all the staff for O&M, Power Plant administration, security, transportation, overheads, office costs, professional fees such as audit tax and legal, as well as some minor fixed operational costs such as environmental monitoring that do not change with dispatch levels. Total O&M is estimated 2% of the Project Cost excluding Interest during construction. Fixed O&M is 75% of the total O&M cost of the project; moreover, the O&M are further subdivided into foreign component and local component as follows:-

Calculation of O&M Cost

	<u>US\$ Million</u>
Project cost excluding IDC	126.28
2% of Total O&M cost/Net Energy (303 GWh)	2.526/303
Fixed O&M cost 75% of the Total O&M	0.00625

Sub Component	Percentage	Cost in Pak Rs.	Cost in Pak Rs.	Indexation
Local	80%	$0.00625 \times 166.587 \times 80\%$	0.83	Pakistan WPI
Foreign	20%	$0.00625 \times 166.587 \times 20\%$	0.21	European CPI/US CPI, Chinese indices, PKR/US \$ and PKR/EURO

Reference: Approved Tariff Petition by NEPRA of Daral Khwar Hydropower Project



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4.4.2. ROE

Return on equity (ROE) and Return on Equity during Construction (RDEDC) comprises a return on equity Invested giving Return on equity of 17% p.a and an IRR or 12.60% net after deduction of withholding tax. This is based on the fact that as per the Guidelines for the Determination of Tariff for IPPs (November 2005). Para 1.4 (c), it has been mentioned that IRR should be equal yield on 10 years PIB plus a premium of x% to be determined by NEPRA.

4.4.3. Debt Component

The Debt component is calculated with the following assumptions:

- Debt is 80% of the Capital Cost of the Project (including IDC).
- Repayment in six monthly installments.
- Grace period equal to the construction period
- Local Debt to be arranged from Hydel Development Fund (HDF) @ 10.09%,
- Debt to be repaid in 20 years after Commercial operations date.

In case there is any change in the assumptions, the debt service component and the Tariff shall be adjusted accordingly.

4.4.4. Adjustments at COD For EPC Cost

The EPC figure forming the basis of this petition is based on Exchange rate of US\$ 1=166.587. The agreed cost shall be further adjusted for reopeners at the time of COD in accordance with the provisions of the signed Contract as per the practices adopted for FIDIC based EPC contracts.

4.4.5. Adjustments at Commercial Operations Date

Total US Dollar Project Cost shall be updated at COD. Debt service, Return on Equity and Return on Equity during Construction shall be adjusted on account of actual variation in debt and equity drawdown actual interest during construction and financing costs/fees and Insurance during Construction. Once adjusted, the Debt services, Return on Equity and Return on Equity during Construction shall be updated accordingly and the relevant Capacity Charges calculated thereon.

The relevant reference tariff components shall be adjusted at COD on account of variation in US\$/PKR parity.

4.4.6. Modification, Additions To Be Treated as Pass Through

The monetary impact of all or any modifications or additions required by the Power Purchaser that are not considered in the Project shall be treated as pass through.

5. ESCALATIONS AND INDEXATIONS

After the COD, the tariff tables provided will be indexed to factors as described above and the Reference Exchange Rates. The details are provided herein below:


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5.1. Indexation

5.1.1. Inflation Factor

The following components are subject to inflation factors

Tariff Components	Tariff Indexation & Adjustment
Water Use Charges	Pakistan CPI
Variable O&M - (Foreign)	European CPI/US CPI, Chinese Indices, PKR/US \$ and PKR/Euro.
Variable O&M - (Local)	Pakistan CPI
Fixed O&M - Foreign	European CPI/US CPI, Chinese Indices, PKR/US \$ and PKR/Euro.
Fixed O&M - Local	Pakistan CPI
ROE/ROEDC / Withholding Tax @7.5%	US\$ to Pak Rupees
Interest/Mark-Up Payment (Local Currency Loan)	Adjustment for relevant KIBOR Variation

5.1.2. Currency Indexation

The reference exchange rate used is US\$ 1: Rs 166.587 for tariff calculations. Adjustment in EPC cost and other cost items shall be made as per documentary evidence and as allowed by NEPRA Authority at COD. After COD following adjustments are requested for approval.

Insurance	PKR/US\$ and on the basis of actual insurance payment
ROE/ROEDC	PKR/US\$ exchange rate
Withholding tax @7.5%	PKR/US\$ exchange rate
Foreign Loan principal	PKR/US\$ exchange rate
Foreign Loan interest	PKR/US\$ exchange rate

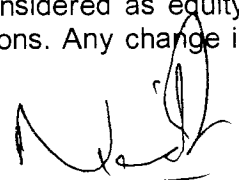
5.1.3. Interest Rate Indexation

The following components are subject to interest rate indexation:

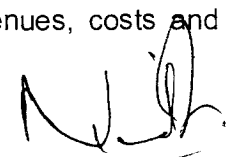
Interest Charge on Local Loan	10.09% Hydel Development Fund (HDF)
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6. PROPOSED TARIFF AND ASSUMPTIONS

- 6.1. Project financing structure is based on 80:20 debt-equity ratio, though the project has been entirely funded from PEDOs resources. 80% of the project capital cost is considered to be arranged through sponsor loan and 20% is considered as equity. The proposed reference tariff is based on the following assumptions. Any change in any of these assumptions will result in changes in the Reference.


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- 6.2. The proposed tariff ("Proposed Tariff") being submitted is a levelized tariff US Cents 9.2798/kWh (or Rs.15.459/kWh) for a 30-year term.
- 6.3. The Insurance during operation Cost assumed @ 1.00% of the EPC Cost was found to be in line with NEPRA's benchmarks (Schedule II, See Section 9).
- 6.4. Annual Plant Factor-51.00%
 - Installed Capacity -69 MW
 - Annual Energy 303GWh
- 6.5. Construction period of 60 months has been requested for approval by NEPRA for IDC purposes
- 6.6. Every maintenance cycle shall be as per manufacturer's recommendations.
- 6.7. Debt to Equity Ratio of 80:20.
- 6.8. Debt Tenor of 20 years.
- 6.9. 100% of Debt has been assumed to be financed through sponsor loan provided by PEDO.
- 6.10. No sales tax is assumed, General Sales Tax, all other taxes and any new taxes shall be treated as pass-through.
- 6.11. Withholding tax on dividend @ 7.5% as required under the Income Tax Ordinance, 2001 is assumed. Any change the rate of the Withholding tax would be pass through to the Power Purchaser.
- 6.12. Hydrological Risk to be borne by Power Purchaser.
- 6.13. Return on Equity and Return on Equity during construction @ 17% per annum is assumed over 30 years.
- 6.14. Being a Public Sector Project, no Water use charges have been considered.
- 6.15. Reference exchange rate (PKR/US\$) is taken for tariff calculations PKR 166.587 US \$ and the tariff does not incorporate any inflation.
- 6.16. The tariff table shall be updated at COD in order to correct the tariff according to the prevailing CPI, WPI, KIBOR, LIBOR and exchange rates (PKR/US\$ and US\$/€ and PKR/€).
- 6.17. Actual equity investment profile will be used to update Return on Equity during Construction at the time of COD.
- 6.18. Actual IDC using the actual spread will be used to update the capital cost at COD. Any assumptions on commitment fees, upfront fees, arranger costs and similar charges assumed in the funding plan including PRI etc. will be adjusted at financial close.
- 6.19. Any change in applicable accounting standards which impact revenues, costs and equity IRR shall be reflected in tariff accordingly.



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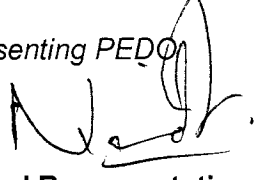
6.20. No hedging cost has been assumed for exchange rate fluctuations during construction.

6.21. No Debt service Reserve Account (DSRA), Maintenance Reserve Account or Contingency Reserve Account or Any other Reserve Account has been considered in the tariff model.

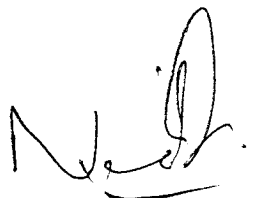
Summary

In view of the foregoing submission and further submissions as may be made during hearing and giving of evidence or in rejoinder to a reply by the Petitioner, respectively requested that in exercise of its statutory powers under the NEPRA Act read with the Tariff Rules, NEPRA may be pleased to allow the tariff with the calculations, amount and assumptions set out in the Annexures.

Signature of the competent Authority representing PEDO


**Petitioner
Through authorized Representative
Niamat Khan
Authorized Authority**

Dated: 24/06/20 (LAWI) HYDROPOWER PROJ
PEDO, Peshawar


**PROJECT DIRECTOR
(LAWI) HYDROPOWER PROJ
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Annexure - I

Reference Tariff Table

Pakhtunkhwa Energy Development Organization (PEDO)
Lawi Hydropower Project
EPC Stage Reference Tariff

Year	Variable O&M	Variable O&M (L)	Variable O&M (F)	Total	Fixed O&M	Insurance	ROE & Equity Red	ROEDC	With Holding Tax 7.5%	Loan Repayment	Interest Charges	Total	Capacity Purchase Price	Rs. per kWh
	Rs./kWh	Rs./kWh	Rs./kWh	Rs./kWh	Rs./kWh	Rs./kWh	Rs./kWh	Rs./kWh	Rs./kWh	Rs./kWh	Rs./kWh	Rs./kWh	Rs./kWh	Rs./kWh
1	0.3471	0.1736	0.1736	0.3471	1.0414	0.6336	2.3605	1.0692	0.2572	1.1874	7.1071	13.6565	13.6565	14.0036
2	0.3471	0.1736	0.1736	0.3471	1.0414	0.6336	2.3605	1.0692	0.2572	1.3102	6.9843	13.6565	13.6565	14.0036
3	0.3471	0.1736	0.1736	0.3471	1.0414	0.6336	2.3605	1.0692	0.2572	1.4458	6.8488	13.6565	13.6565	14.0036
4	0.3471	0.1736	0.1736	0.3471	1.0414	0.6336	2.3605	1.0692	0.2572	1.5953	6.6992	13.6565	13.6565	14.0036
5	0.3471	0.1736	0.1736	0.3471	1.0414	0.6336	2.3605	1.0692	0.2572	1.7604	6.5342	13.6565	13.6565	14.0036
6	0.3471	0.1736	0.1736	0.3471	1.0414	0.6336	2.3605	1.0692	0.2572	1.9425	6.3521	13.6565	13.6565	14.0036
7	0.3471	0.1736	0.1736	0.3471	1.0414	0.6336	2.3605	1.0692	0.2572	2.1434	6.1512	13.6565	13.6565	14.0036
8	0.3471	0.1736	0.1736	0.3471	1.0414	0.6336	2.3605	1.0692	0.2572	2.3651	5.9294	13.6565	13.6565	14.0036
9	0.3471	0.1736	0.1736	0.3471	1.0414	0.6336	2.3605	1.0692	0.2572	2.6098	5.6848	13.6565	13.6565	14.0036
10	0.3471	0.1736	0.1736	0.3471	1.0414	0.6336	2.3605	1.0692	0.2572	2.8797	5.4148	13.6565	13.6565	14.0036
11	0.3471	0.1736	0.1736	0.3471	1.0414	0.6336	2.3605	1.0692	0.2572	3.1776	5.1169	13.6565	13.6565	14.0036
12	0.3471	0.1736	0.1736	0.3471	1.0414	0.6336	2.3605	1.0692	0.2572	3.5063	4.7882	13.6565	13.6565	14.0036
13	0.3471	0.1736	0.1736	0.3471	1.0414	0.6336	2.3605	1.0692	0.2572	3.8691	4.4255	13.6565	13.6565	14.0036
14	0.3471	0.1736	0.1736	0.3471	1.0414	0.6336	2.3605	1.0692	0.2572	4.2693	4.0252	13.6565	13.6565	14.0036
15	0.3471	0.1736	0.1736	0.3471	1.0414	0.6336	2.3605	1.0692	0.2572	4.7109	3.5836	13.6565	13.6565	14.0036
16	0.3471	0.1736	0.1736	0.3471	1.0414	0.6336	2.3605	1.0692	0.2572	5.1983	3.0963	13.6565	13.6565	14.0036
17	0.3471	0.1736	0.1736	0.3471	1.0414	0.6336	2.3605	1.0692	0.2572	5.7360	2.5586	13.6565	13.6565	14.0036
18	0.3471	0.1736	0.1736	0.3471	1.0414	0.6336	2.3605	1.0692	0.2572	6.3294	1.9652	13.6565	13.6565	14.0036
19	0.3471	0.1736	0.1736	0.3471	1.0414	0.6336	2.3605	1.0692	0.2572	6.9841	1.3104	13.6565	13.6565	14.0036
20	0.3471	0.1736	0.1736	0.3471	1.0414	0.6336	2.3605	1.0692	0.2572	8.2945	0.5880	14.2444	14.2444	14.5916
21	0.3471	0.1736	0.1736	0.3471	1.0414	0.6336	2.3605	1.0692	0.2572	-	-	5.3619	5.3619	5.7090
22	0.3471	0.1736	0.1736	0.3471	1.0414	0.6336	2.3605	1.0692	0.2572	-	-	5.3619	5.3619	5.7090
23	0.3471	0.1736	0.1736	0.3471	1.0414	0.6336	2.3605	1.0692	0.2572	-	-	5.3619	5.3619	5.7090
24	0.3471	0.1736	0.1736	0.3471	1.0414	0.6336	2.3605	1.0692	0.2572	-	-	5.3619	5.3619	5.7090
25	0.3471	0.1736	0.1736	0.3471	1.0414	0.6336	2.3605	1.0692	0.2572	-	-	5.3619	5.3619	5.7090
26	0.3471	0.1736	0.1736	0.3471	1.0414	0.6336	2.3605	1.0692	0.2572	-	-	5.3619	5.3619	5.7090
27	0.3471	0.1736	0.1736	0.3471	1.0414	0.6336	2.3605	1.0692	0.2572	-	-	5.3619	5.3619	5.7090
28	0.3471	0.1736	0.1736	0.3471	1.0414	0.6336	2.3605	1.0692	0.2572	-	-	5.3619	5.3619	5.7090
29	0.3471	0.1736	0.1736	0.3471	1.0414	0.6336	2.3605	1.0692	0.2572	-	-	5.3619	5.3619	5.7090
30	0.3471	0.1736	0.1736	0.3471	1.0414	0.6336	2.3605	1.0692	0.2572	-	-	5.3619	5.3619	5.7090
Average Tariff														
1 - 10 Yrs.	0.3471	0.1736	0.1736	0.3471	1.0414	0.6336	2.3605	1.0692	0.2572	1.9240	6.3706	13.6565	13.6565	14.0036
11-20 Yrs.	0.3471	0.1736	0.1736	0.3471	1.0414	0.6336	2.3605	1.0692	0.2572	5.2076	3.1458	13.7153	13.7153	14.0624
21-30 Yrs.	0.3471	0.1736	0.1736	0.3471	1.0414	0.6336	2.3605	1.0692	0.2572	0.0000	0.0000	5.3619	5.3619	5.7090
Levelized Tariff Rs. kWh														
1 - 30 Yrs.	0.4062	0.2031	0.2031	0.4062	1.2187	0.7415	2.7626	1.2513	0.3010	2.7723	6.0053	15.0528	15.0528	15.4590
Levelized Tariff US\$. kWh														
1 - 30 Yrs.	0.2439	0.1219	0.1219	0.2439	0.7316	0.4451	1.6583	0.7511	0.1807	1.6642	3.6049	9.0360	9.0360	9.2798

Levelized Tariff (1-30 Years) discounted at 10% per annum = US cents 15.459/kWh at reference exchange rate of 1 US\$=Rupees 166.5870

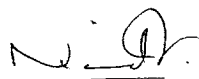

PROJECT DIRECTOR
LAWI HPP

Annexure - 2

Debt Serving Schedule

Pakhtunkhwa Energy Development Organization (PEDO)
Lawi Hydropower Project
Debt Servicing Schedule (Local)

Period	Principal Million Rs.	Repayment Million Rs.	Mark-Up Million Rs.	Balance Million Rs.	Total Debt Service Million Rs.	Annual Principal Repayment- Rs./kWh	Annual Interest Rs./kWh	Annual Debt Servicing Rs./kWh
	21430.311	175.46	1,081.16	21,254.85	1,256.62			
	21,254.85	184.32	1,072.31	21,070.53	1,256.62	1.19	7.11	8.29
1	21430.311	359.78	2,153.47	21,070.53	2,513.25	1.19	7.11	8.29
	21,070.53	193.62	1,063.01	20,876.91	1,256.62			
	20,876.91	203.38	1,053.24	20,673.53	1,256.62	1.31	6.98	8.29
2	21,070.53	397.00	2,116.25	20,673.53	2,513.25	1.31	6.98	8.29
	20,673.53	213.64	1,042.98	20,459.89	1,256.62			
	20,459.89	224.42	1,032.20	20,235.46	1,256.62	1.45	6.85	8.29
3	20,673.53	438.07	2,075.18	20,235.46	2,513.25	1.45	6.85	8.29
	20,235.46	235.74	1,020.88	19,999.72	1,256.62			
	19,999.72	247.64	1,008.99	19,752.08	1,256.62	1.60	6.70	8.29
4	20,235.46	483.38	2,029.86	19,752.08	2,513.25	1.60	6.70	8.29
	19,752.08	260.13	996.49	19,491.95	1,256.62			
	19,491.95	273.26	983.37	19,218.69	1,256.62	1.76	6.53	8.29
5	19,752.08	533.39	1,979.86	19,218.69	2,513.25	1.76	6.53	8.29
	19,218.69	287.04	969.58	18,931.65	1,256.62			
	18,931.65	301.52	955.10	18,630.13	1,256.62	1.94	6.35	8.29
6	19,218.69	588.56	1,924.68	18,630.13	2,513.25	1.94	6.35	8.29
	18,630.13	316.73	939.89	18,313.40	1,256.62			
	18,313.40	332.71	923.91	17,980.68	1,256.62	2.14	6.15	8.29
7	18,630.13	649.45	1,863.80	17,980.68	2,513.25	2.14	6.15	8.29
	17,980.68	349.50	907.13	17,631.18	1,256.62			
	17,631.18	367.13	889.49	17,264.05	1,256.62	2.37	5.93	8.29
8	17,980.68	716.63	1,796.62	17,264.05	2,513.25	2.37	5.93	8.29
	17,264.05	385.65	870.97	16,878.40	1,256.62			
	16,878.40	405.11	851.52	16,473.29	1,256.62	2.61	5.68	8.29
	17,264.05	790.76	1,722.49	16,473.29	2,513.25	2.61	5.68	8.29
	16,473.29	425.55	831.08	16,047.75	1,256.62			
	16,047.75	447.02	809.61	15,600.73	1,256.62	2.88	5.41	8.29
10	16,473.29	872.56	1,640.69	15,600.73	2,513.25	2.88	5.41	8.29
	15,600.73	469.57	787.06	15,131.16	1,256.62			
	15,131.16	493.26	763.37	14,637.91	1,256.62	3.18	5.12	8.29
11	15,600.73	962.82	1,550.42	14,637.91	2,513.25	3.18	5.12	8.29
	14,637.91	518.14	738.48	14,119.77	1,256.62			
	14,119.77	544.28	712.34	13,575.48	1,256.62	3.51	4.79	8.29
12	14,637.91	1,062.42	1,450.82	13,575.48	2,513.25	3.51	4.79	8.29
	13,575.48	571.74	684.88	13,003.74	1,256.62			
	13,003.74	600.59	656.04	12,403.16	1,256.62	3.87	4.43	8.29
13	13,575.48	1,172.33	1,340.92	12,403.16	2,513.25	3.87	4.43	8.29
	12,403.16	630.88	625.74	11,772.27	1,256.62			
	11,772.27	662.71	593.91	11,109.56	1,256.62	4.27	4.03	8.29
14	12,403.16	1,293.60	1,219.65	11,109.56	2,513.25	4.27	4.03	8.29
	11,109.56	696.15	560.48	10,413.41	1,256.62			
	10,413.41	731.27	525.36	9,682.15	1,256.62	4.71	3.58	8.29
15	11,109.56	1,427.41	1,085.83	9,682.15	2,513.25	4.71	3.58	8.29
	9,682.15	768.16	488.46	8,913.99	1,256.62			
	8,913.99	806.91	449.71	8,107.07	1,256.62	5.20	3.10	8.29
16	9,682.15	1,575.07	938.17	8,107.07	2,513.25	5.20	3.10	8.29
	8,107.07	847.62	409.00	7,259.45	1,256.62			
	7,259.45	890.38	366.24	6,369.07	1,256.62	5.74	2.56	8.29
17	8,107.07	1,738.01	775.24	6,369.07	2,513.25	5.74	2.56	8.29
	6,369.07	935.30	321.32	5,433.76	1,256.62			
	5,433.76	982.49	274.13	4,451.27	1,256.62	6.33	1.97	8.29
18	6,369.07	1,917.80	595.45	4,451.27	2,513.25	6.33	1.97	8.29
	4,451.27	1,032.06	224.57	3,419.22	1,256.62			
	3,419.22	1,084.12	172.50	2,335.09	1,256.62	6.98	1.31	8.29
19	4,451.27	2,116.18	397.07	2,335.09	2,513.25	6.98	1.31	8.29
	2,335.09	1,138.82	117.81	1,196.27	1,256.62			
	1,196.27	1,196.27	60.35	0.00	1,256.62	7.71	0.59	8.29
20	2,335.09	2,335.09	178.16	0.00	2,513.25	7.71	0.59	8.29



PROJECT DIRECTOR
LAWI HPP